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Spectrum of Non-neoplastic Skin Lesions: A Histopathological Study based on Punch Biopsy

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ABSTRACT

Introduction: Accurate diagnosis of skin is of utmost importance for management of different skin disorders presenting with the similar clinical signs and symptoms. Therefore to confirm the diagnosis and start treatment biopsy becomes inevitable and for obtaining diagnostic full-thickness skin specimens Punch biopsy is the primary method.

Aims & Objective: The present study was to analyse the incidence and age & sex distribution of dermatological disorders presenting to B.J. Medical College, Civil Hospital Ahmedabad (tertiary care centre), Gujarat and access their histopathological profile

Materials & Methods: This was a retrospective study carried out at the department of Pathology B.J. Medical College & Civil Hospital, Ahmedabad for a period of 1 year (1st January 2016 to 31st December 2016). With necessary clinical details obtained in a proforma, punch biopsy specimen is sent to the histopathology section for final diagnosis. Formalin fixed, paraffin embedded sections were prepared & slides were routinely stained with H & E and special stains applied wherever necessary. Data obtained was tabulated and analysed

Results: Total 232 cases were analysed. 21-30 years age group constituted 22% of the total cases. Male/Female ratio is 61/39. Hypopigmented patch/plaque was the most common clinical lesion (27%). Hansen's disease was the most common histopathological diagnosis reported (30%) followed by vesiculobullous lesions (12%).

Conclusion: Punch biopsy is a very simple outdoor procedure and very useful for skin lesions. Hansen's disease is still most common skin disease for which biopsy is done followed by vesiculobullous lesion. Tattoo induced granuloma is also a common lesion along with lichenoid lesion.

Key Words: Accurate diagnosis, Punch biopsy, Non-neoplastic skin lesions

INTRODUCTION

Several Studies conducted over a period of time have shown high prevalence of skin disorders in developing countries, the histopathological spectrum of which has been highly variable but the clinical presentation is restricted to only a few changes such as hyperpigmentation, hypopigmentation, macules, papules, nodules and a few others[1]. So the separation of each of these becomes important because the treatment and prognosis tends to be disease specific[2]. The punch biopsy is generally the most useful procedure as it is quick to perform convenient, and only produce a small wound. It create a full thickness sample of skin that allows the pathologist to get a good overview of epidermis, dermis and most of the time the subcutis also[3]. The aim of the present study was to classify the various skin disorders prevalent in the surrounding community and determine their demographic distribution.

AIMS & OBJECTIVES

The present study was to analyse the incidence and age & sex distribution of dermatological disorders presenting to B.J. Medical College, Civil Hospital Ahmedabad (tertiary care centre), Gujarat and access their histopathological

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profile and also gives knowledge and understanding about usefulness of punch biopsy in skin lesion.

MATERIALS & METHODS

This was a retrospective study carried out at the department of Pathology B.J. Medical College & Civil Hospital Ahmedabad for a period of 1year (1st January 2016 to 31st December 2016). Punch biopsy taken and necessary clinical details were obtained in a proforma, and sent to the histopathology section for final diagnosis. Formalin fixed, paraffin embedded sections were prepared & slides were routinely stained with H & E and special stains applied wherever necessary. Data obtained was tabulated and analysed.

Case selection and exclusion criteria:

Clinically diagnosed cases of non-neoplastic skin disorders were included.

Cases with tumorous histology were not included in our study.

Inadequate and autolysed skin biopsies were excluded from our study.

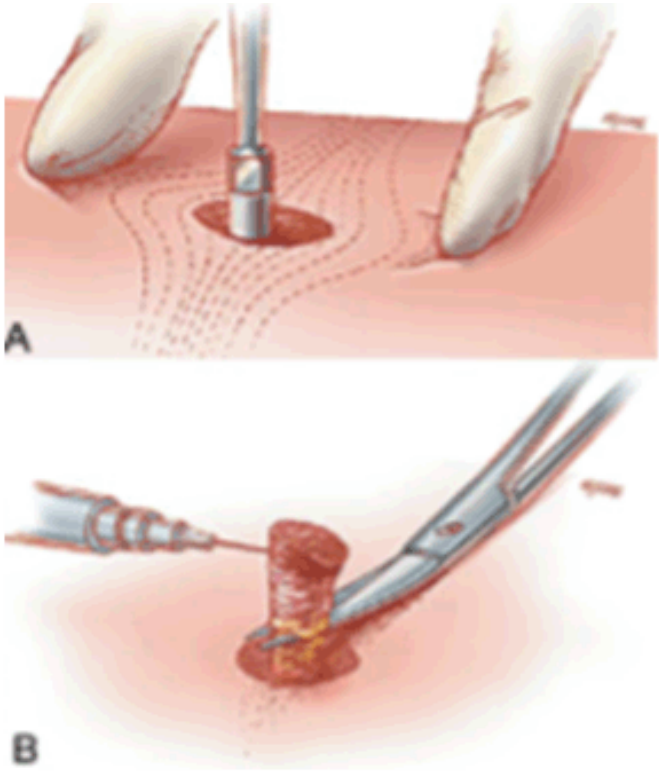


Figure 1: Showing the technique of taking punch biopsy.

Punch biopsy technique[4]

A. First we keep the punch biopsy instrument perpendicular to the surface of the lesion then we press it down into the lesion while it is rotated clockwise and anticlockwise, cutting down till the subcutaneous fat. After this the punch biopsy instrument is removed.

B. Then we gently lift the biopsy specimen with the help of needle to avoid crush artifact. At the level below the dermis we cut the specimen with help of a scissor. In case of small punch biopsy defects (2 to 3 mm) no need to suture it, but larger wounds (4 to 5 mm) must be closed to reduce healing time and scarring.

Punch biopsy can be kept from curling during fixation by placing them on a piece of file card prior to immersion. When the specimen is 0.3 mm or less in diameter, it is best processed into Paraffin in one piece. It may then be sampled at various levels in the block. It prevents loss of tissue during the facing up of the block and allows more adequate sampling.

Tissue processing[5]

Paraffin embedding and block making, trimming, sectioning and staining.

Hematoxylin & Eosin Staining Procedure[5]

- Sections were dewaxed in 2 jars of Xylene, each for 2 min.
- Slides were kept in 2 jars of absolute alcohol, each for 2 mins to remove xylene.
- Put the slides for 1 min. in 90% alcohol
- Put the slides for 1 min. in 70% alcohol
- Rinsed in water.
- Put the sections in Harris Hematoxylin for 7-10 min.
- Wash in running water and the sections turn blue.
- Then Sections were kept in 1% acid alcohol solution just for 5-10 sec.
- Washed with the tap water for 5-6 mins.
- Dipped in saturated solution of lithium carbonate till the section is completely blue.
- Washing with the tap water for 5-6 mins.
- Put the sections in 50% alcohol for 2 mins. Followed by 70% alcohol for 2 mins. And finally in 90% alcohol for 2 mins.
- Then sections were kept in 1% Eosin Y for 60 seconds.
- Rinsed for 2 min. in 95% alcohol 2 times each
- Dehydrated with absolute alcohol for 2 mins. for 3 times.
- 3 changes in Xylene each for 2 mins. is done for clearing.
- DPX. Mount.

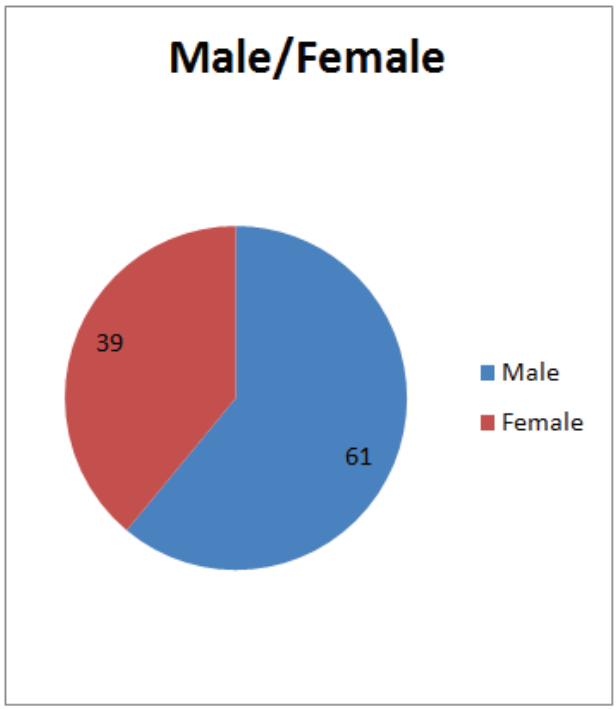
RESULTS

Table 1: Showing histopathological spectrum of Non-neoplastic skin lesion

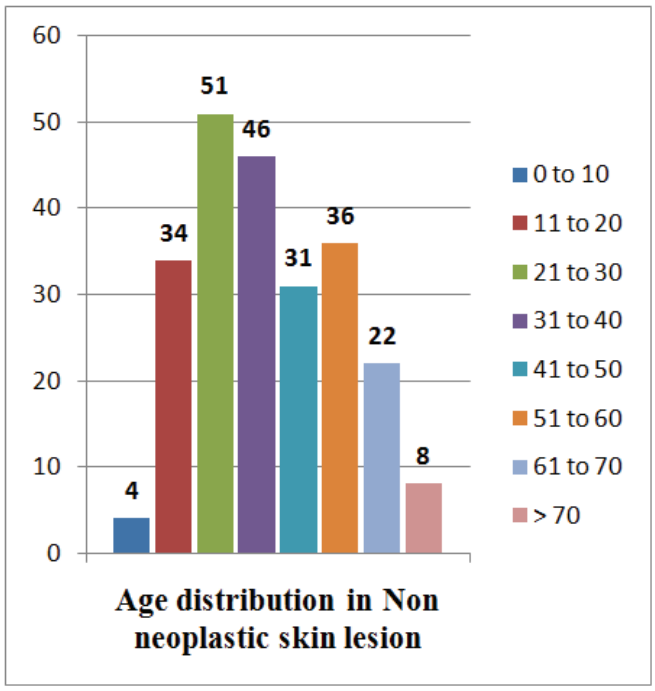
Sr. no.	Disease	No.	M/F ratio	Age range
1.	Hansen's disease			
	Lepromatous leprosy	28	3/1	14-70 years
	Tuberculoid leprosy	26	3.3/1	15-65 years
	Erythema nodosum leprosum	12	5/1	15-65 years
	Histoid leprosy	5	4/1	20-56 years
2.	Vesiculobullous lesion			
	Pamphigus vulgaris	15	1/1	20-62 years
	Bulous pamphigoid	6	2/1	43-72 years
	Pamphigus folliaceous	3	2/1	29-75 years
	Dermatitis herpetiformis	2	1/1	25-55 years
	IgA pamphigus	1	M	53 years
	Pamphigus herpetiformis	1	F	16 years
	Epidermolysis bullosa pruriginosa	1	M	40 years
3.	Lichen planus	19	1.7/1	16-70 years
4.	Tattoo granuloma	14	1/1.8	18-37 years
5.	Pityriasis			
	Pityriasis rosea	2	1/1	24-52
	Pityriasis rubra pilaris	1	M	40 years
	Pityriasis lichenoides chronica	1	F	17 years
	Pityriasis lichenoides et varioliformis acuta	1	M	18 years
6.	Psoriasis	7	2.5/1	31-62 years
7.	Cutaneous Tuberculosis			
	Lupus valgaris	5	1/1.5	15-65 years
	Tuberculosis verrucosa cutis	1	F	13
8.	Morphea	5	1/1.5	18-59 years
9.	Benign verrucous lesion	4	3/1	21-60 years
10.	Lichenoid dermatitis	4	1/3	17-65 years
11.	Chronic granulomatous lesion	4	1/1	35-90 years
12.	Eczema	4	3/1	21-40 years
13.	Actinic prurigo	3	2/1	39-78 years
14.	Melasma	3	1/2	20-22 years
15.	Keloid formation	3	1/2	20-51 years
16.	Granuloma anulare	3	1/2	23-70 years
17.	Lupus miliarisis disseminatus facies	3	2/1	20-32 years
18.	Seborrheic keratosis	3	0/3	46-75 years
19.	Pyoderma gangrenosum	2	1/1	35-42 years
20.	Epidermodysplasia verruciformis	2	2/0	19-56 years
21.	Erethema annulare centrifugum	2	1/1	22-62 years
22.	Porokeratosis	2	1/1	21-36 years
23.	Cutaneous LE	2	0/2	20-30 years
24.	Jessner's disease	2	1/1	50-63 years
25.	Prurigo simplex	2	0/2	13-28 years
26.	Sweet's syndrome	2	0/2	40-45 years
27.	Darier's disease	1	M	32 years
28.	Keratosis pilaris	1	F	30 years
29.	Epidermolytic hyperkeratosis	1	M	19 years
30.	Keratosis follicularis spinulosa decalvans	1	M	8 years
31.	Verrucous haemangioma	1	F	33 years
32.	keratoacanthoma	1	F	23 years
33.	Haemangioma	1	M	16 years
34.	Wart	1	M	48 years
35.	Foot hand syndrome	1	F	35 years
36.	Gouty tophy	1	M	45 years
37.	Ochronosis	1	M	16 years
38.	Haily-haily disease	1	M	64 years
39.	Acanthosis nigricans	1	F	19 years
40.	Spongiotic dermatitis	1	M	70 years
41.	Steatocystoma multiplex	1	M	21 years
42.	Keratoacanthoma	1	M	73 years
43.	Urticarial vasculitis	1	F	30 years
44.	Kyrle's disease	1	M	40 years
45.	Reactive perforating collagenoses	1	M	42 years
46.	Reticulate pigmentation of Dowling disease	1	F	35 years
47.	Postkalazaar dermal leishmaniasis	1	M	50 years
48.	Erythroderma	1	M	76 years
49.	Actinomycosis	1	M	36 years
50.	Eumycitoma	1	M	72 years
51.	Neurofibroma	1	F	24 years

Histopathological examination results of punch biopsy show the wide range of diagnosis even though the clinical features are similar in different patients. Total 232 cases were taken for a period of 1 year (1st January 2016 to 31st December 2016). Results show the male predominance with male to female ratio is 3/2. Patient with younger age group (< 40 years) are 59% with 22% of patients are between 21-30 years age group. With 30.6% of patients most common diagnosis in our study is Hansen's disease followed by vesicobullous

lesions with 12.5% of cases. Within vesicobullous lesion pemphigus vulgaris is most common. Lichen planus consist of 8% of cases and Psoriasis consist of 3% of cases. Tattoo granuloma is also a major problem with 6% of total case studied. 5 cases of Histoid leprosy was also seen which is a rare form of Lepromatous Leprosy.



Graph I: Showing male to female ratio in Non neoplastic skin lesions.



Graph II: Showing age distribution in Non neoplastic skin lesion.

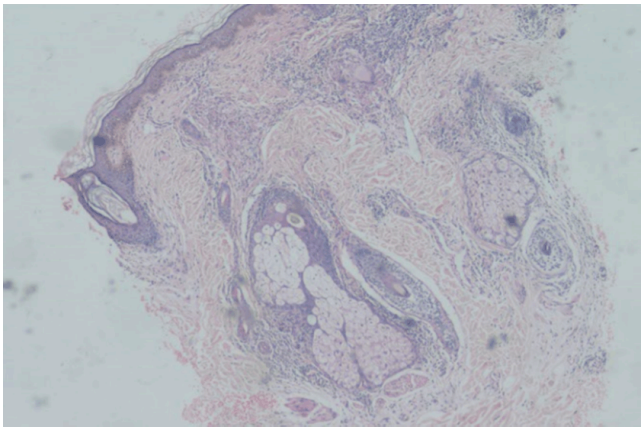


Figure 2: Punch biopsy section from a patient with tuberculoid leprosy showing epitheloid cell granuloma and few Langhan's giant cells. Lymphocytic infiltration involving the papillary dermis upto the epidermis.

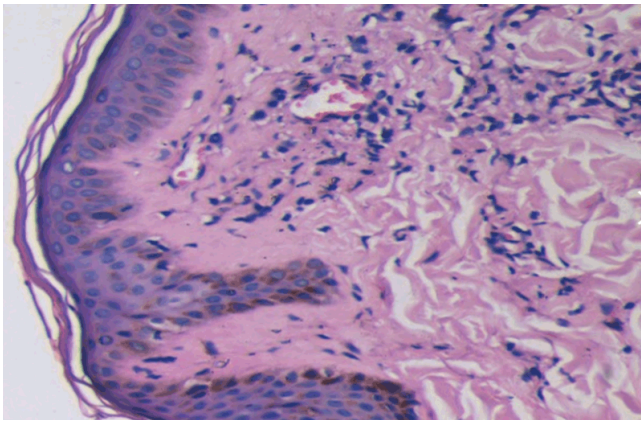


Figure 3: Punch biopsy section from a patient with lepromatous leprosy showing numerous foamy macrophages (Lepra cells/Virchow cells) around blood vessels. A grenz zone is present in papillary dermis.

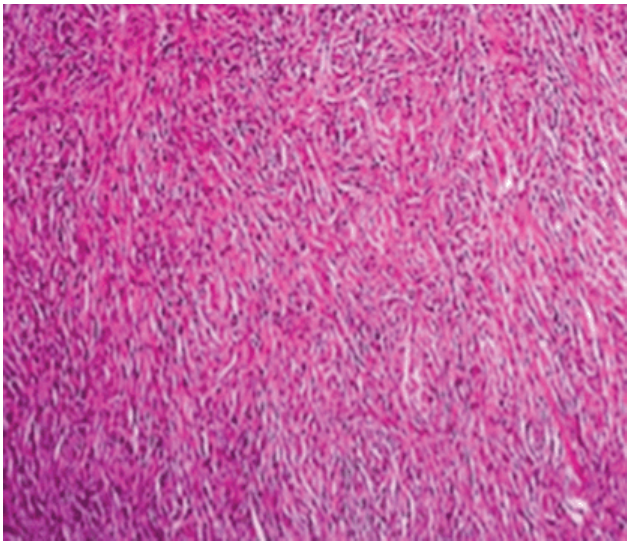


Figure 4: Lepromatous leprosy. A histoid lesion, with spindle cell & proliferation of macrophages.

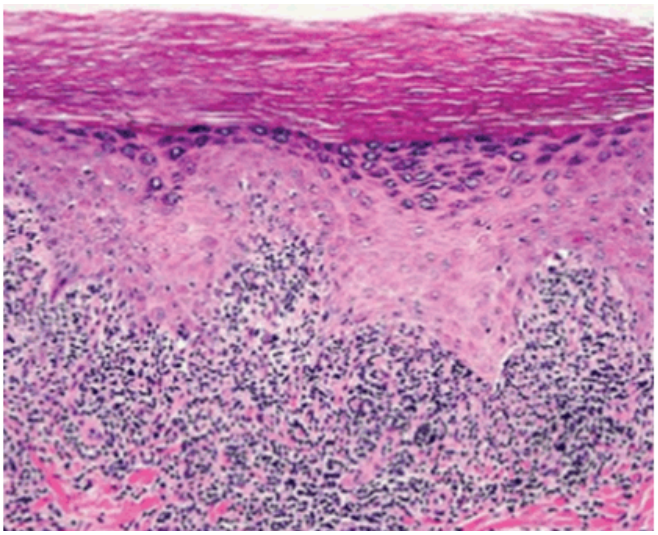


Figure 5: Showing Lichen planus with dense band-like infiltrate predominantly of lymphocytes in the papillary dermis that extends to the epidermis, where there is vacuolar alteration of the basal layer, necrotic keratinocytes, irregular acanthosis, wedge-shaped hyper-granulosis, and compact orthokeratosis.

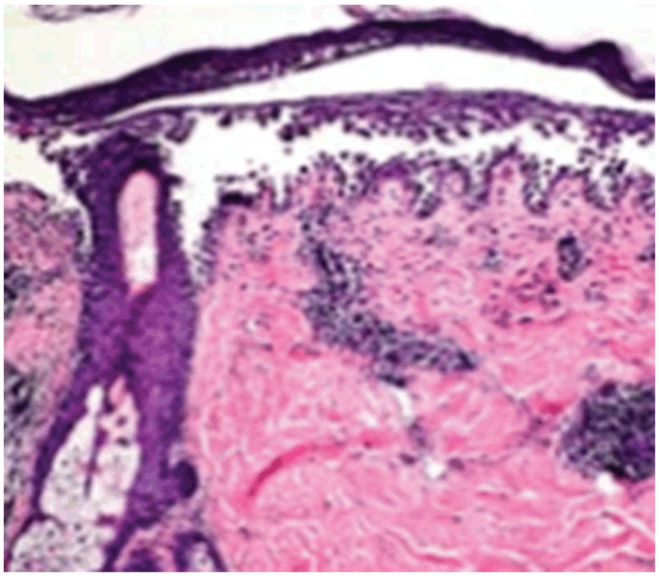


Figure 6: Showing Pemphigus vulgaris- with intraepidermal acantholytic blister has a suprabasal cleavage plane. Acantholysis has extended into adnexal structures and stratum spinosus.

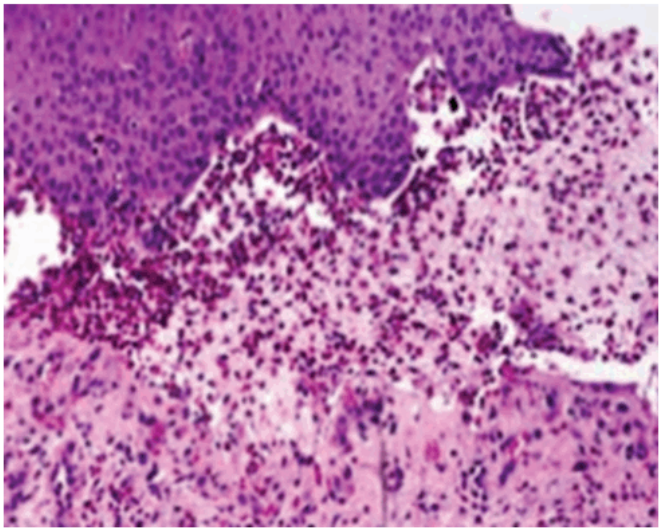


Figure 7: Showing cell rich variant of Bullous pemphigoid-, sub-epidermal blister formation and an inflammatory infiltrate composed predominantly of eosinophils and few neutrophils in the dermis and bullous cavity

DISCUSSION

This was a retrospective study carried out at the department of Pathology B.J. Medical College & Civil Hospital Ahmedabad for a period of 1year (1st January 2016 to 31st December 2016). In our study total 232 cases are analysed. 80 patients were analysed in the study by Rajasekhar et al[6]. 112 cases were analysed in the study by Singh et al.[7]. In the present study, 22% of the patients were in the age group of 21 to 30 years and 19.8% of the patients were in the age group of 31-40 years. 25% of the patients were in the age group of 21 to 30 years in the study by Yonus et al[8]. 23.75% of the patients were in the age group of 31 to 40 years in the study by Rajasekhar et al.

With 30.6% of patients most common diagnosis in our study is Hansen's disease followed by vesicobullous lesions with 12.5% of cases. In the study by Bharambhe et al.[9] lichenoid lesions were most common (46.57%) followed by psoriasis (19.88%). Most common histopathological diagnosis was Psoriasis (42.5%) followed by Lichen planus in the study by Rajasekhar et al

Table 2: Comparing the histopathological spectrum of different Non- neoplastic skin lesions from other studies.

	B.J. Medical College and Civil Hospital Ahmedabad, Gujarat	Bhaskar Medical College, Moinabad, Telangana[10]	Gandhi Medical College, Bhopal, Madhya Pradesh[11]
Total cases	232	92	270
period	1 year (January 2016-December 2016)	3 years (May 2012 to April 2015)	5 years (2015)
Male/Female	3/2	3/2	2.3/2
Hansen's disease (%)	30.6%	23.9%	20.7%
Vesicobullous lesion	12.5%	-	2.2%
Lichen planus	8%	15%	3%
Psoriasis	3%	12%	2.6%

CONCLUSION

Histopathological spectrum of skin lesions have been highly variable but the clinical presentation shows very few changes such as hyperpigmentation, hypopigmentation, macules, papules, nodules and a few others. Therefore for confirmation of diagnosis and initiation of treatment biopsy becomes inevitable in various skin disorders.

Punch biopsy is the basic technique for obtaining diagnostic full-thickness skin specimens and can be performed in OPD set up. It is very simple technique to learn and perform. Supervision is rarely needed after a physician has performed two or three procedures. when suture closure of the wound is performed only general surgical and suture-tying skills are required.

It is important to perform the skin biopsy at appropriate phase of the disease, from proper site, of proper thickness especially in cases of non infectious inflammatory dermatoses.

In diseases in which expected changes are quantitive rather than qualitative (hyperkeratosis, acanthosis, increase in dermal thickness), the evaluation of these changes are best made by taking a punch biopsy also of clinically normal skin nearby, which represents the best possible control.

Hansen's disease is still most common skin disease for which biopsy is done followed by vesiculobullous lesion. Tattoo induced granuloma is also a common lesion along with lichenoid lesion.

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